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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/721,445	11/24/2003	Hossein Sedarat	6491P066	7128

7590 01/16/2008

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EXAMINER	
WILLIAMS, LAWRENCE B	

ART UNIT	PAPER NUMBER
2611	

MAIL DATE	DELIVERY MODE
01/16/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/721,445	SEDARAT ET AL.
	Examiner	Art Unit
	Lawrence B. Williams	2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 October 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-45* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4, 11-19, 26-34, 41-45* is/are rejected.

7)☒ Claim(s) *5-10,20-25 and 35-40* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Terminal Disclaimer

1. The terminal disclaimer filed on 19 October 2007 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of co-pending Application No. 10/773,054 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-4, 11-19, 26-34, 41-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stopler et al. (US 2003/0043925 A1) in view of Goodson et al. US Patent 5,844,940).

(1) With regard to claim 1, Stopler et al. discloses a method comprising: determining a power level of noise in a signal (pg. 4, paragraph 0055, Stopler teaches measurement of the noise power spectrum (power level) of the input signal.); detecting whether impulse noise is in the signal (pg. 4, paragraph 0056).

Stopler et al. does not disclose determining a gain factor associated with the impulse noise; and applying the gain factor to the power level of noise in the signal to calculate an equivalent noise power.

However, Goodson et al. discloses determining a gain factor (TB_n) associated with noise; and applying the gain factor to the power level of noise in the signal to calculate an equivalent noise power (col. 8, lines 22-41; Goodson discloses applying the factor (TB_n) to the noise power spectrum to make the measured noise power the same (equivalent noise power) as it would be if measured in the bandwidth 1/T and discloses a determination of $TB_n = 0.25$ for a preferred embodiment (col. 8, line 47)).

One skilled in the art at the time of invention would have been motivated to apply the teachings of Goodson et al. as a method of determining an optimal transmit power level.

(2) With regard to claim 2, Goodson et al. also discloses determining a signal-to-noise ratio based on a signal power of the signal and the equivalent noise power (Goodson et al. discloses in col. 8, lines 25 and 55, determining a signal-to-distortion ratio (equivalent to signal-to-noise, since the distortion in effect acts as noise in the system) using the equivalent noise power and signal power).

One skilled in the art at the time of invention would have been motivated to apply the teachings of Goodson et al. as a method of determining an optimal transmit power level.

(3) With regard to claim 3, Stopler et al. also discloses wherein the signal is a multicarrier signal including a plurality of subcarriers (pg. 1, paragraph 0004).

(4) With regard to claim 4, Stopler et al. also discloses wherein the noise detected in the signal is detected based on data from the plurality of sub-carriers (pg. 4, paragraph 0056).

(5) With regard to claim 11, Stopler et al. also discloses determining bit-loading based on a signal-to-noise ratio (pg. 1, paragraph 0004).

(6) With regard to claim 12, Goodson et al. discloses determining a gain factor (TB_n) associated with noise; and applying the gain factor to the power level of noise in the signal to calculate an equivalent noise power for a first carrier frequency (col. 8, lines 22-41; Goodson discloses applying the factor (TB_n) to the noise power spectrum to make the measured noise power the same (equivalent noise power) as it would be if measured in the bandwidth 1/T and discloses a determination of $TB_n = 0.25$ for a preferred embodiment (col. 8, line 47) and determining a gain factor and an equivalent noise power for a second carrier frequency (col. 7, line 62- col. 8, line 48). Goodson et al. discloses applying the method to each combination of carrier frequency and symbol rate.

One skilled in the art at the time of invention would have been motivated to apply the teachings of Goodson et al. to the sub-carriers as a method of determining an optimal transmit power level for each sub-carrier.

(7) With regard to claim 13, Stopler et al. discloses a method comprising: determining a power level of Gaussian noise in a signal (pg. 4, paragraph, 0053, Stopler discloses a 'σ power white Gaussian noise"); detecting whether non-Gaussian noise is in the signal (pg. 4, paragraph 0056; Stopler discloses detecting impulse noise in the signal).

Stopler et al. does not disclose determining a gain factor associated with the non-Gaussian noise; and applying the gain factor to the power level of the Gaussian noise in the signal to calculate an equivalent noise power.

However, Goodson et al. discloses determining a gain factor (TB_n) associated with noise; and applying the gain factor to the power level of noise in the signal to calculate an equivalent noise power (col. 8, lines 22-41; Goodson discloses applying the factor (TB_n) to the noise power spectrum to make the measured noise power the same (equivalent noise power) as it would be if measured in the bandwidth 1/T and discloses a determination of $TB_n = 0.25$ for a preferred embodiment (col. 8, line 47)).

One skilled in the art at the time of invention would have been motivated to apply the teachings of Goodson et al. as a method of determining an optimal transmit power level.

(8) With regard to claim 14, Goodson et al. also discloses determining a signal-to-noise ratio based on a signal power of the signal and the equivalent noise power (Goodson et al. discloses in col. 8, lines 25 and 55, determining a signal-to-distortion ratio (equivalent to signal-to-noise, since the distortion in effect acts as noise in the system) using the equivalent noise power and signal power).

One skilled in the art at the time of invention would have been motivated to apply the teachings of Goodson et al. as a method of determining an optimal transmit power level.

(9) With regard to claim 15, Stopler et al. also discloses wherein the signal is a multicarrier signal including a plurality of subcarriers (pg. 1, paragraph 0004).

(10) With regard to claims 16-19, 26-27, claims 16-19, 26-27 disclose the method of claims 1-4, 11-12, implemented by executable instructions on a computer readable medium. As noted above, the combination of Stopler at al. and Goodson et al. discloses all limitations of claims 1-4, and 11-12. Though a computer readable medium is not taught, executable instructions performing methods of hardware are well known in the art and would be a design

choice of the inventor. One skilled in the art would have been motivated to implement the invention on a computer readable medium for ease of adjusting design parameters.

(11) With regard to claims 28-30, claims 28-30 disclose the method of claims 13-15 implemented by executable instructions on a computer readable medium. As noted above, the combination of Stopler at al. and Goodson et al. discloses all limitations of claims 13-15. Though a computer readable medium is not taught, executable instructions performing methods of hardware are well known in the art and would be a design choice of the inventor. One skilled in the art would have been motivated to implement the invention on a computer readable medium for ease of adjusting design parameters.

(12) With regard to claim 31, Stopler et al. discloses an apparatus comprising: for determining a power level of noise in a signal (pg. 4, paragraph 0055); means for detecting whether impulse noise is in the signal (Fig. 1, elements 12, 13).

However, Stopler et al. does not disclose means for determining a gain factor associated with the impulse noise; and means for applying the gain factor to the power level of noise in the signal to calculate an equivalent noise power.

However, Goodson et al. discloses in Fig. 7, (col. 7, lines 62- col. 8, line 47) means (SDR Processor, 412) for determining a gain factor (TB_n) associated with noise; and means (SDR Processor, 412) for applying the gain factor to the power level of noise in the signal to calculate an equivalent noise power (col. 8, lines 22-41; Goodson discloses applying the factor (TB_n) to the noise power spectrum to make the measured noise power the same (equivalent noise power) as it would be if measured in the bandwidth 1/T and discloses a determination of $TB_n = 0.25$ for a preferred embodiment (col. 8, line 47)).

One skilled in the art at the time of invention would have been motivated to apply the teachings of Goodson et al. as a method of determining an optimal transmit power level.

(13) With regard to claim 32, Goodson et al. also discloses means (SDR Processor, 412) for determining a signal-to-noise ratio based on a signal power of the signal and the equivalent noise power (Goodson et al. discloses in col. 8, lines 25 and 55, determining a signal-to-distortion ratio (equivalent to signal-to-noise, since the distortion in effect acts as noise in the system) using the equivalent noise power and signal power).

One skilled in the art at the time of invention would have been motivated to apply the teachings of Goodson et al. as a method of determining an optimal transmit power level.

(14) With regard to claim 33, Stopler et al. also discloses wherein the signal is a multicarrier signal including a plurality of subcarriers (pg. 1, paragraph 0004).

(15) With regard to claim 34, Stopler et al. also discloses wherein the noise detected in the signal is detected based on data from the plurality of sub-carriers (pg. 4, paragraph 0056).

(16) With regard to claim 41, Stopler et al. also discloses determining bit-loading based on a signal-to-noise ratio (pg. 1, paragraph 0004; means would be inherent).

(17) With regard to claim 42, Goodson et al. discloses determining a gain factor (TB_n) associated with noise; and applying the gain factor to the power level of noise in the signal to calculate an equivalent noise power for a first carrier frequency (col. 8, lines 22-41; Goodson discloses applying the factor (TB_n) to the noise power spectrum to make the measured noise power the same (equivalent noise power) as it would be if measured in the bandwidth 1/T and discloses a determination of $TB_n = 0.25$ for a preferred embodiment (col. 8, line 47; means would be inherent) and determining a gain factor and an equivalent noise power for a second

carrier frequency (col. 7, line 62- col. 8, line 48). Goodson et al. discloses applying the method to each combination of carrier frequency and symbol rate. Again mean for applying the method would be inherent.

One skilled in the art at the time of invention would have been motivated to apply the teachings of Goodson et al. to the sub-carriers as a method of determining an optimal transmit power level for each sub-carrier.

(18) With regard to claim 43, Stopler et al. discloses an apparatus comprising: for determining a power level of Gaussian noise in a signal (pg. 4, paragraph 0055); means for detecting whether non-Gaussian noise is in the signal (Fig. 1, elements 12, 13, Stopler detects impulse noise).

Stopler et al. does not disclose means for determining a gain factor associated with the non-Gaussian noise; and means for applying the gain factor to the power level of the Gaussian noise in the signal to calculate an equivalent noise power.

However, Goodson et al. discloses in Fig. 7, (col. 7, lines 62- col. 8, line 47) means (SDR Processor, 412) for determining a gain factor (TB_n) associated with noise; and means (SDR Processor, 412) for applying the gain factor to the power level of noise in the signal to calculate an equivalent noise power (col. 8, lines 22-41; Goodson discloses applying the factor (TB_n) to the noise power spectrum to make the measured noise power the same (equivalent noise power) as it would be if measured in the bandwidth 1/T and discloses a determination of $TB_n = 0.25$ for a preferred embodiment (col. 8, line 47)).

One skilled in the art at the time of invention would have been motivated to apply the teachings of Goodson et al. as a method of determining an optimal transmit power level.

(19) With regard to claim 44, Goodson et al. also discloses means (SDR Processor, 412) for determining a signal-to-noise ratio based on a signal power of the signal and the equivalent noise power (Goodson et al. discloses in col. 8, lines 25 and 55, determining a signal-to-distortion ratio (equivalent to signal-to-noise, since the distortion in effect acts as noise in the system) using the equivalent noise power and signal power).

One skilled in the art at the time of invention would have been motivated to apply the teachings of Goodson et al. as a method of determining an optimal transmit power level.

(20) With regard to claim 45, Stopler et al. also discloses wherein the signal is a multicarrier signal including a plurality of subcarriers (pg. 1, paragraph 0004).

Allowable Subject Matter

3. Claims 5-10, 20-25, 35-40 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a.) Albert et al. discloses in EP 0 377 965 Combined Deemphasis Circuit and Noise Blanker.

b.) Azenkot et al. discloses in US 2004/0057502 A1 Detection of Impulse Noise Using Unused Codes In CDMA Systems.

c.) Azenkot et al. discloses in US Patent 6,791,995 B1 Multichannel, Multimode Docsis Headend Receiver.

d.) Hariton et al. discloses in US Patent 4,845,466 System For High Speed Digital Transmission In Repetitive Noise Environment.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence B Williams whose telephone number is 571-272-3037. The examiner can normally be reached on Monday-Friday (8:00-6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ghayour Mohammad can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lawrence B. Williams

lbw
January 7, 2008

M. G.
MOHAMMED GHAYOUR
SUPERVISORY PATENT EXAMINER